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## GLOBE Program Workshop

### GPS, Clouds and Contrails, Aerosols, and Surface Temperature



The Educator Resource Center welcomed educators from WV, PA, MD, and VA for a three day GLOBE Program Workshop Oct. 28-30.

GLOBE is a NASA funded interdisciplinary program with learning activities and protocols aligned with the National Science Education Standards. Independent evaluations have

to be uploaded to the GLOBE database. This data is then available for teachers, students, scientists and researchers around the world to use in their studies.

Jessica Taylor, a GLOBE trainer from

NASA Langley Research Center, presented information and training on the Cloud and Contrail Protocols. Her presentations included having the participants learn the ten types of clouds and what contrails can reveal about the atmosphere.

mometers to do GLOBE Surface Temperature protocols.

Todd Ensign, of the ERC provided the instruction for the Global Positioning Systems protocols which are part of the data collection for many of the other protocols.



*Top left: Educators taking surface Temperature readings*

*Center left: Workshop participants exploring remote sensing using a radar "gun"*

*Bottom left: Dr. Kevin Czajkowski discussing student research using GLOBE Surface Temperature measurements*

*Center top: Dr. Paul Adams demonstrating the physics of aerosols*

*Center: Educators comparing concentrations using Probe-ware*

*Bottom right: Jessica Taylor clearing up confusion on clouds*



shown that GLOBE improves students' higher order thinking and science process skills.

Educators attending the workshop learned to carry out a series of investigations designed by scientists to gather data about Earth and how it functions as a global system. Implementing these investigations in the classroom allows the resulting collected data

Aerosols were taught by Dr. Paul Adams of Fort Hayes State University who included an aerosol game and particle collection activity among his offerings.

Among the many items Dr. Kevin Czajkowski of the University of Toledo covered was how solar insolation

drives atmospheric circulation. The educators used infrared ther-



The participants received materials and instruments to help them implement the protocols in their particular settings.

GLOBE training for educators and pre-service teachers can be obtained throughout the year by contacting the ERC (see page four) and arranging a workshop.





# WV Science Teachers Association Conference



*Top left: Dr. Steve Brooks, NOAA Atmospheric Scientist*



*Center left: FSU students during a share-a-thon*



*Bottom left: one of many great sessions*



*Top center: The computer lab served several sessions*



*Top right: Dr. Dixon Butler, Physicist, Educator, Policy Maker*



*Center right: Michelle Adams and Frank Bogden, two of those honored for the teaching of science and math*

## Model Aviation Workshop

Preston County gifted students spent a “flying high” day at the ERC. Jarod Peter-savage (NASA IV&V) introduced the “A” in NASA followed by Aleksander Marthinussen (Mid-Atlantic Aerospace Complex) who led the students in activities which taught the basic physics of flight using airfoils and a wind tunnel. Todd Ensign (ERC) taught the use of a flight simulator program enabling students to practice take-offs, flying and landing on a computer before actually flying model planes. Eric Sorton (WVHTC) shared his research on F-15 planes and covered safety at the field.



After driving to the Fairmont Flyers’ Meredith Field, a model airplane park, club members George Current and Gerry Phipps and Eric Sorton engaged students by allowing them to student-fly a variety of planes. Despite heavy winds, occasional blowing snow, and the biting cold, several of the planes were able to take off and fly. Students were flying using the “Buddy Box” or student driver set up. If the plane was in danger of crashing one of the experienced mentors was able to take over. The day concluded with an acrobatic demonstration by George Current whose plane is capable of completing many aerial stunts.

*Left: George Current and student flying a model plane using the Buddy Box system*

## Upcoming ERC Workshops and Events

**Nov. 3-5 WV Science Teachers Conference at Flatwoods**

**Nov. 9 Fascinating Flight..5-8 PM**

**Dec. 7 Plants in Space: Hydroponics and Lunar Growth Chambers**

**.....5-8 PM**

**Dec. 13 Kindernauts, Echo the Bat, and Amelia the Pigeon.....4-7 PM**

**Jan. 14 Robots and Ratios**

**.....10 AM-4 PM**

**Jan. 16 Robots and Ratios Part 2**

**.....10 AM-4PM**

**Jan. 28 STARLAB and Telescopes**

**.....4 AM—8 PM**

**Feb. 11 Robotic Explorations and WeDo Robotics.....10 AM—4 PM**

**Feb. 16 NASA Games.....4-7 PM**

**Feb. 20 Virtual Worlds**

**.....10 AM-4 PM**



*Center: Eric Sorton and George Phipps adjust the ERC's new model plane.*

*Top right: Students with a Fairmont Flyer plane*

*Bottom right: Gerry Phipps shares his joy of flying with his “flying school bus” plane*





## Student Workshops—Living and Working in Space

Students from the Learning Out Loud school group came on October 6 and students from the Cornerstone Co-Op came on October 25 for a Living and Working in Space workshop. Connecting via the Distance Learning Network to Johnson Space Center in Houston, Texas they watched astronauts training in the Neutral Buoyancy Lab, the world's largest indoor pool, and viewed other areas of the Space Center in-



cluding Mission Control for the International Space Station. While at the ERC, the students participated in activities to understand the limitations encountered while living and working in space. They studied

space suit design using the Potato Astronaut activity, used glove boxes to accomplish an array of tasks, learned how astronauts eat in space and tasted "astronaut food." Using the ERC computer lab to visit NASA's spacesuit website and the ever popular Spaceplace were also highlights of the visit.



NASA IVV Strategic Communications Officer, Christina Moats provided the students



with NASA career information.

*Left: Students complete a task in a limited volume of space.*

*Center: Students viewing the Spacesuit website.*

*Right: Designing a spacesuit to protect their potato astronaut*

## Welcome Nicole Culp— ERC Equipment Manager

Nicole has joined the ERC staff as equipment manager replacing Josh Revels who has transitioned to the IV&V Librarian/ERC intern position.

Nicole has a BS in Mathematics from FSU with a minor in History. She is currently enrolled at FSU picking up an extra degree in education to teach math 5th grade through adult.

She is an avid sport fan with the WVU Mountaineers and the Atlanta Braves being her top favorites.

After becoming engaged last Christmas, Nicole is planning an October 6, 2012 wedding.



## Student Workshop—Planetary Geology

Covenant Christian School's 8th grade class visited the ERC to explore the topic of Planetary Geology.

After learning about NASA missions to study other planets from engineer, Greg Black, students began a round of activities that had them experiencing the difficulties

of studying other planetary surfaces, creating the land forms found on Mars, discovering what factors affect the size and type of crater formation, and comparing the volume of the planets.

Amy Phillips, Graduate Assistant for Student Programs also spoke to the students explain-



ing the function of the Educator Resource Center as part of the services of NASA IV&V and Fairmont State University to educators and students in West Virginia.

*Left: Finding meteorites*

*Center: Mapping volcanoes on Mars*

*Right: Comparing the volume of planets*

## The ERC Staff

Todd Ensign ...Program Manager

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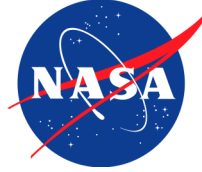
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Nicole Culp....ERC Intern / Equipment Loan Manager

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*The NASA Independent Verification and Validation Program Educator Resource Center's goal is to serve teachers, informal educators, and pre-service teachers to enable them to reach their goals. Through a grant with Fairmont State University, the NASA IV&V Program ERC provides materials, equipment for loan, and professional development workshops for informal and formal educators both at the facility and around the state of West Virginia that reflect NASA's current research and technology.*



## Links to Student Competitions

First Lego League Robotics:

<http://www.firstlegoleague.org/>

Real World Design Challenge:

<http://www.realworlddesignchallenge.org/>

Team America Rocketry Challenge:

<http://rocketcontest.org/>

Green Aviation Contests:

<http://aero.larc.nasa.gov/competitions.htm>

## Workshop Quote of the Month:

**The hands-on activities gave me the confidence I needed to institute these topics and practices in my classroom. Great Job! Participant in Fascinating Flight workshop**

## Science Quote of the Month:

**Every great advance in science has issued from a new audacity in imagination. John Dewey**

## Where in WV is the ERC?

October-November Workshops in Red

October-November Equipment Loans in Blue

### To schedule a workshop:

Contact the ERC by calling 304-367-8436 or emailing:

[pamela.casto@ivv.nasa.gov](mailto:pamela.casto@ivv.nasa.gov) or

[josh.revels@ivv.nasa.gov](mailto:josh.revels@ivv.nasa.gov)

### To schedule equipment for loan:

First, check the equipment loan calendar on the ERC website to see if the equipment is available for the dates desired. Then choose your dates (up to a two week loan period) and email Nicole Culp who will schedule the loan.

[nicole.culp@ivv.nasa.gov](mailto:nicole.culp@ivv.nasa.gov)

